WHAT IS CLAIMED IS:

1. A method of treatment for pulmonary infections caused by gram-negative bacteria, said method comprising steps:

a) preparing a concentrated inhalable aztreonam lysinate formulation comprising from about 1 to about 250 mg of aztreonam lysinate, said aztreonam lysinate in an inhalable dry powder form, or from about 1 to about 250 mg of aztreonam lysinate, or a pharmaceutically acceptable salt thereof, dissolved in from about 1 to about 5 ml of an aerosolable solution containing from about 0.1 to about 0.9% of chloride or an equivalent thereof; and

b) delivering said aztreonam lysinate dry powder or the aerosolable solution to the lung endobronchial space of airways of a patient in need thereof by a nebulization in an aerosol having a mass medium average diameter between about 1 and about 5 μ.

2. The method of claim 1 wherein the formulation is delivered one to twelve times a day, provided that if the dry powder or the solution is delivered more then twice a day, a total dose of aztreonam lysinate is not higher than 750 mg a day.

3. The method of claim 2 wherein the gram-negative bacteria is *Burkholderia cepacia*, *Stenotrophomonas maltophilia*, *Alcaligenes xylosoxidans*, and multidrug resistant *Pseudomonas aeruginosa*.

4. The method of claim 3 wherein aztreonam lysinate is administered as the dry inhalable powder and wherein the dry powder has particle sizes predominantly between about 1 and

about 5 microns and wherein the dry powder is delivered by a dry powder inhaler or by a metered dose inhaler or in the aerosolable solution.

5. The method of claim 4 comprising administration of from about 10 to about 200 mg of the aztreonam lysinate inhalable dry powder twice a day.

6. The method of claim 5 comprising administration of from about 50 to about 100 mg of the aztreonam lysinate inhalable dry powder twice or three times a day.

7. The method of claim 6 wherein the aerosolable solution comprises from about 5 to about 250 mg of aztreonam lysinate dissolved in from about 1 to about 5 ml of a from 0.1 to about 0.9% saline solution containing from about 0.09 to about 0.9% w/v of chloride.

8. The method of claim 7 wherein said aerosolable solution comprises about 75 mg/ml of aztreonam lysinate, has pH between about 4.2 and 7.5 and saline content from about 0.1 to about 0.45% of chloride.

9. The method of claim 8 wherein said aerosolable solution has pH between about 5.5 and 7.

10. The method of claim 9 wherein said aerosolable solution is delivered by a jet, electronic, ultrasonic or atomization nebulizer.

11. An inhalable pharmaceutically acceptable composition comprising from about 1 to about 250 mg per one dose of aztreonam lysinate derived from alpha aztreonam, said

formulation suitable for treatment of pulmonary bacterial infections caused by gram-negative bacteria wherein said aztreonam lysinate comprises equimolar amounts of aztreonam and lysine prepared as an inhalable dry powder.

12. The composition of claim 11 wherein the aztreonam lysinate dry powder is prepared by milling, spray drying or particle precipitation to the powder having a particle size with a mass medium average diameter from about 1 to about 5 μ.

13. The composition of claim 12 wherein aztreonam lysinate is dissolved in from about 1 to about 5 ml of the saline comprising between about 0.09% and about 0.9% of chloride or equivalent amount of bromine or iodine, wherein the aerosolable solution has a pH from about 4.2 to about 7.5.

14. The composition of claim 12 wherein aztreonam lysinate is dissolved in a saline diluted to from about 0.1 to about 0.45% of sodium chloride, and wherein the aerosolable solution has a pH from about 5.5 to about 7.

15. The composition of claim 14 additionally comprising a separately formulated diluent for reconstitution of the aztreonam lysinate dry powder wherein the dose of aztreonam lysinate is about 75 mg/ml of the diluent.

16. A process for preparation of aztreonam lysinate comprising steps:

a) dissolving an equimolar amount of aztreonam and equimolar of lysine separatly in water;

b) Titrating said aztreonam with said lysine until aztreonam is dissolved; and

c) purifying said aztreonam lysinate solution with

charcoal or filtration.

17. The process of claim 16 wherein said purified aztreonam lysinate solution is freeze-dried or lyophilized.

18. The process of claim 17 wherein the aztreonam is alpha form of aztreonam.

19. The process of claim 18 wherein the aztreonam lysinate prepared from alpha form of aztreonam in dry powder has impurity lower than 1% and stability for at least two years.

20. The process of claim 19 wherein aztreonam lysinate has 47 mg lysine for each 75 mg of aztreonam and wherein said aztreonam lysinate is substantially free of ethyl ester contaminant, ethylalcohol residue, and wherein the quantity of contaminant formed by the chain opening side reaction is reduced.